ABSTRACT OF THE INVENTION

The optical switch of the present invention advantageously comprises a three dimensional architecture capable of taking input optical signals launched in a first direction, deflecting the signals in a second direction and again in a third direction, preferably orthogonal to the first direction, with no moving parts. The signals are collected at an elevated level without passing through additional nodes. Preferably, incoming beams migrating in an x-direction along a bottom layer are steered in a z-direction to an elevated layer comprising sloped stepped mirror surfaces or a parabolic mirror surface. In an alternate embodiment, a wave guide based optical switch advantageously steers input optical signals from a bottom wave guide layer to an elevated wave guide layer via vertical coupling. The beams are then merged into a collection channel and directly coupled into output fibers without passing through additional transition or cross nodes. In another alternate embodiment, an optical switch include two identical functional plates comprising an array of identically sized and shaped transmissive blocks with stationary inclined electro-optic reflective surfaces.